MAINTENANCE AND OPERATION
INSTRUCTION MANUAL

DB44
Device Manager

Compact FM Radio Monitoring Receiver
and Basic Modulation Analyzer

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Introduction

DEVA Broadcast Ltd. was established in 1997 as a broadcasting and telecommunications equipment importer for Bulgaria and Eastern Europe regions. Subsequently, DEVA Broadcast Ltd. has developed and produced a wide range of low and mid - power transmitters, RDS/RBDS Encoders and Decoders, Modulation Monitors, Remote Controls, Site monitoring and other systems for many companies around the Globe. Our experienced and innovative engineers accomplish their bright ideas through successful engineering, marketing and management at DEVA Broadcast's corporate headquarters in Bulgaria.

During the last ten years our company's products have become our partners' best-sellers. After a detailed marketing analysis, our team has decided to launch its own brand products based on the latest technologies in the broadcasting business. We have dedicated our efforts and expertise to the design and development of a complete line of high-quality and competitive products for FM and Digital Radio, Radio Networks, Telecommunication Operators and regulation authorities. We pride ourselves on our post-sales support and relation to the clients which have won us due respect and our market authority position.

Since 2003 DEVA Broadcast Ltd. has been ISO 9001 certified.

The contractors of DEVA Broadcast Ltd. are satisfied with the permanent business comfort and to their own confession they owe it to a great extent as well as their prosperity to the loyal partnership of our company.

General Information

DB44 Device Manager is software developed especially for remote monitoring and control of DB44 Compact FM Radio Monitoring Receiver device.

The devices that you dispose of are distributed throughout an interactive map on which their exact location could be set for the purposes of representation. The map interface shows you at a glance the status of your radio network. It also displays all the critical events or alarms that might have taken place and if there is a need to be checked immediately. The easy-to-use interface allows quick and easy connection to all of the controlled devices.

Aimed at facilitating the use of our products, DB44 Device Manager Software is free of charge. The latest release can be found on our website www.devabroadcast.com or on a supplied CD accompanying the purchased product.

Loading and Running The Software

DB44 Device Manager Software is provided to our customers free of charge. The latest release can be found on our website www.devabroadcast.com.

MINIMAL SYSTEM REQUIREMENTS

Pentium(R) Processor or Compatible
Windows XP and above
1024MB RAM
100MB free hard drive space for installation
16 or 32-bit graphics color depth
1024 by 768 pixels screen resolution
Screen DPI setting to 96 dpi
Universal Serial Bus 2.0

INSTALLING THE SOFTWARE

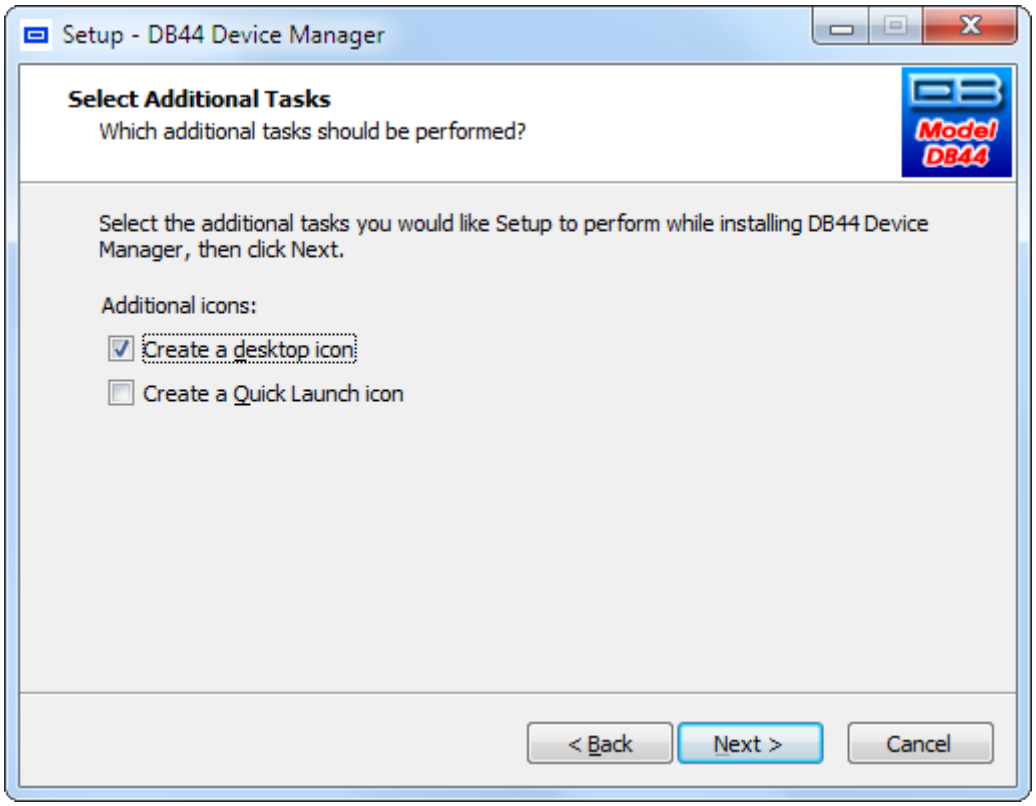
The steps listed below will guide you through the installation process of DB44 Device Manager Software.

1. Use the Installation file which can be downloaded from www.devabroadcast.com/downloads;
2. Find DB44 Device Manager file, double click on the installation file to launch the Wizard;

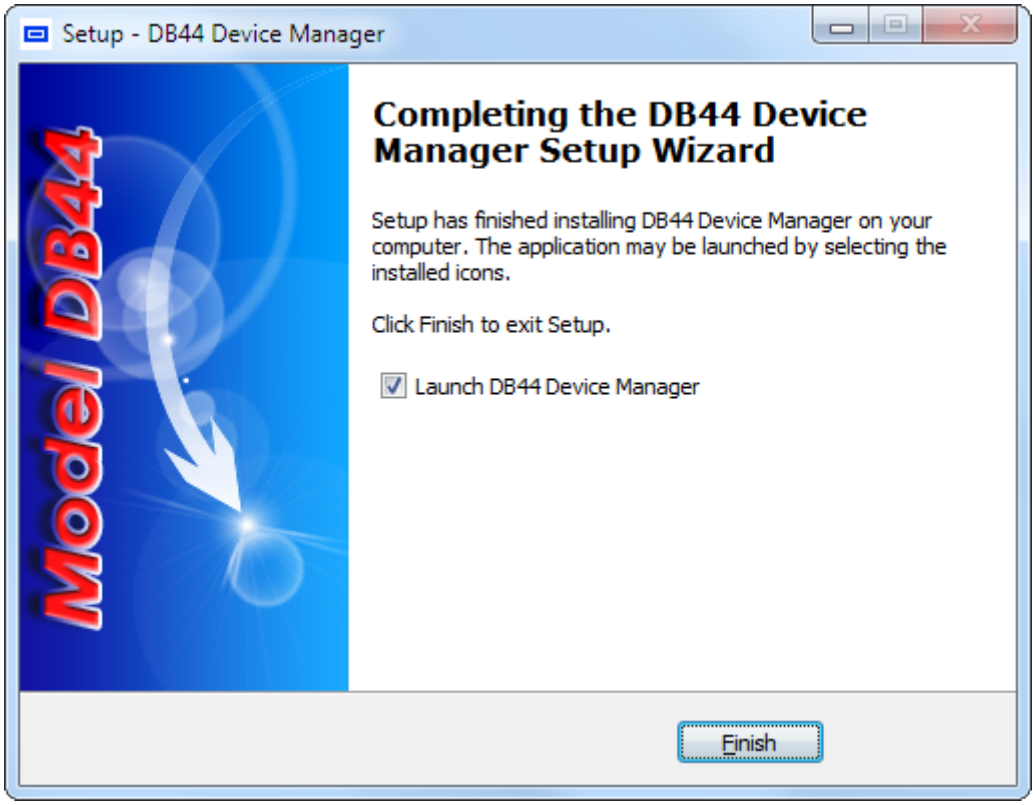
Setup - DB44 Device Manager
Model DB44
Welcome to the DB44 Device Manager Setup Wizard
This will install DB44 Device Manager version x.x.x.xx on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

3. Accept the default recommendations and click “Next>” in the end of each step;

4. When asked to place an icon on the Desktop of your computer make sure that the check box is enabled and click “Next>”;


Setup - DB44 Device Manager
Select Additional Tasks
Which additional tasks should be performed?
Model DB44
Select the additional tasks you would like Setup to perform while installing DB44 Device Manager, then click Next.
Additional icons:
Create a desktop icon
Create a Quick Launch icon
< Back
Next >
Cancel

5. Finally, launch the program.


Setup - DB44 Device Manager
Model DB44
Completing the DB44 Device Manager Setup Wizard
Setup has finished installing DB44 Device Manager on your computer. The application may be launched by selecting the installed icons.
Click Finish to exit Setup.
Launch DB44 Device Manager
Finish

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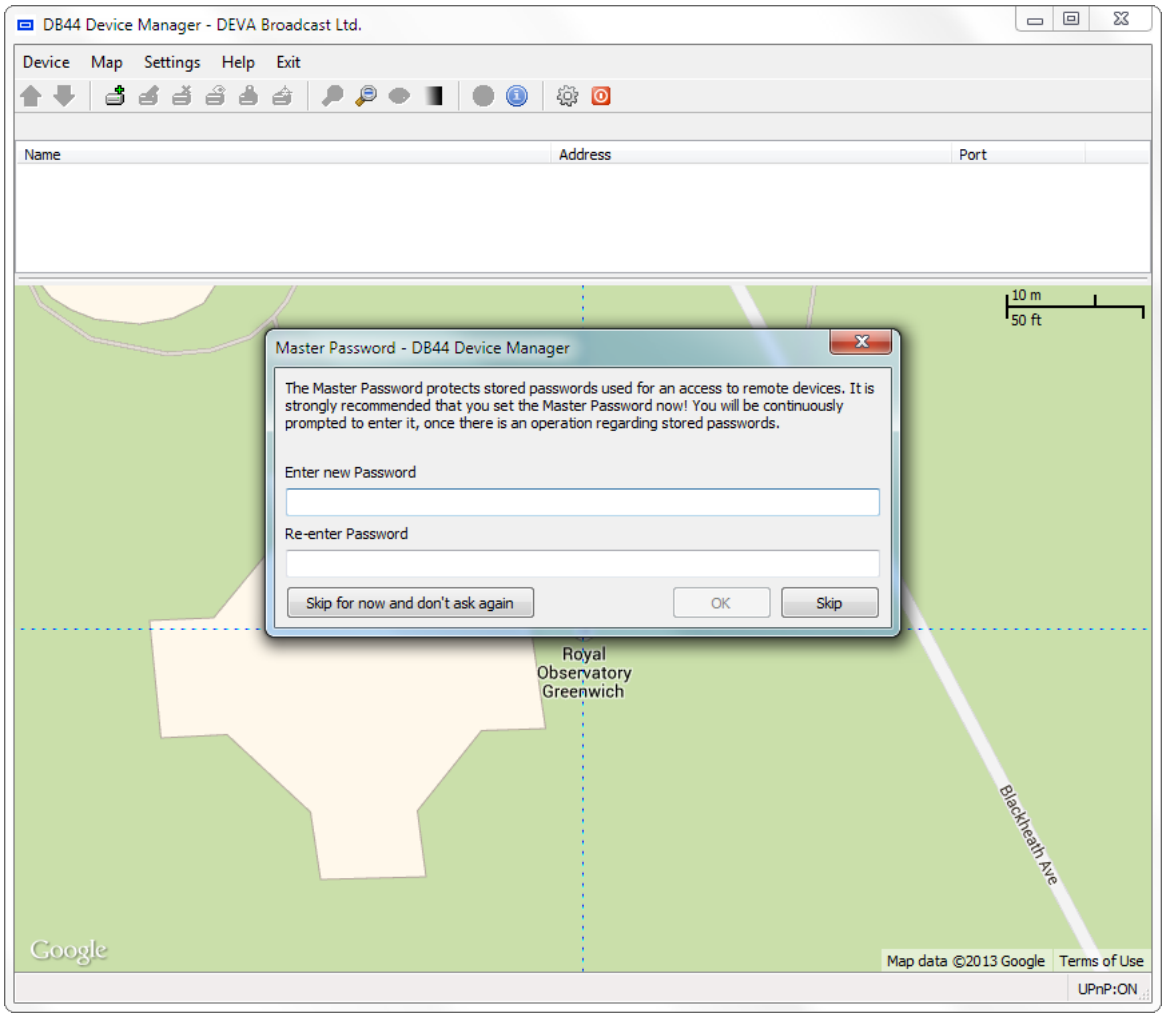
DB44 Device Manager Software Usage

After the installation process is completed, a shortcut to DB44 Device Manager will appear on the desktop of your PC.

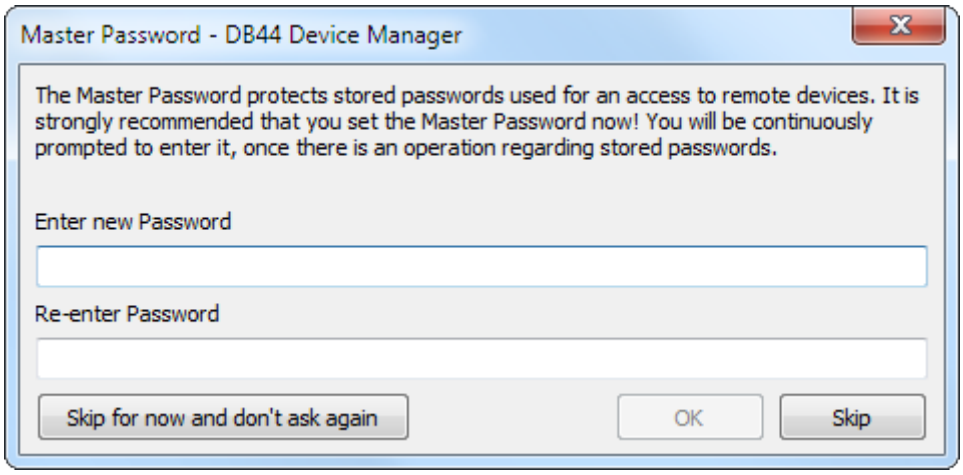
Double click on the shortcut to run the Software. Subsequently, the main application window will appear, followed by a dialog window requiring a Master Password (see “Master Password” on page 10). Most of the functions would be disabled since no devices have been listed in the Device Manager so far.



Getting Started

MASTER PASSWORD

The Master Password protects stored passwords used for an access to remote devices. If a computer is not solely used by you, we suggest that you use a Master Password.


Master Password - DB44 Device Manager
The Master Password protects stored passwords used for an access to remote devices. It is strongly recommended that you set the Master Password now! You will be continuously prompted to enter it, once there is an operation regarding stored passwords.
Enter new Password
Re-enter Password
Skip for now and don't ask again
OK
Skip

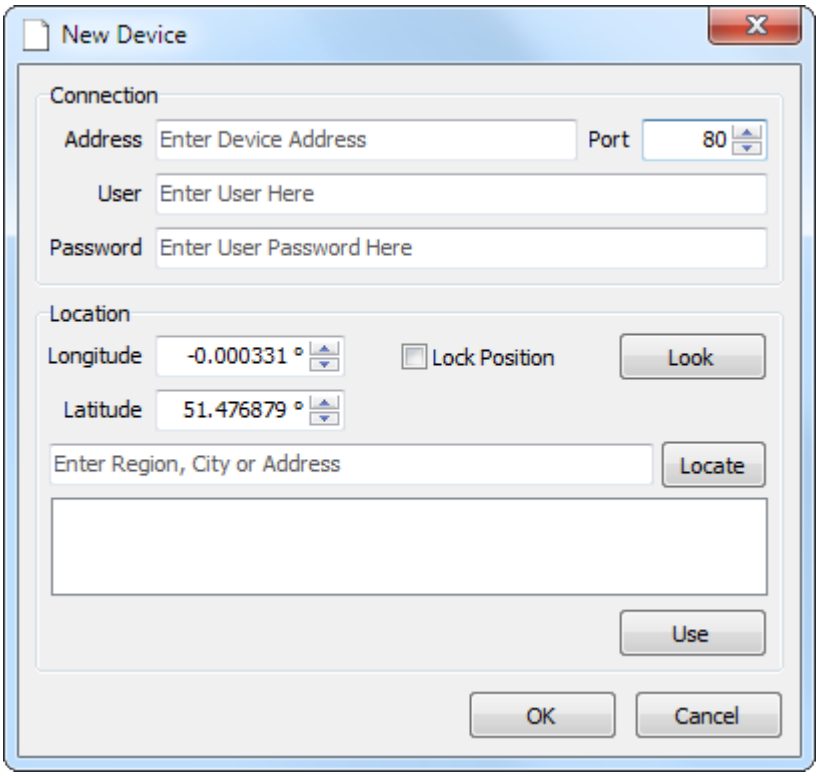
We recommend that you enter the password when DB44 Device Manager is activated for the first time. Otherwise, you will be continuously reminded to enter it any time there is an operation regarding stored passwords.

NOTE: Please make sure you remember the Master Password you have set. If you forget your Master Password, you would not be able to access any of the information protected by it.

The new-found devices, as the local network is concerned (UPnP Discovery) are being automatically added to the current center of the Map (see "Main Application Settings" on page 18). In case of a failure, remote device can be added manually by two options – New Device or Import Device List. These options are explained in detail below:

NEW DEVICE

Press the "New Device" button . A dialog box requiring information about the device will appear. The requested data is not obligatory but might be required in order for an assigned task to be completed.



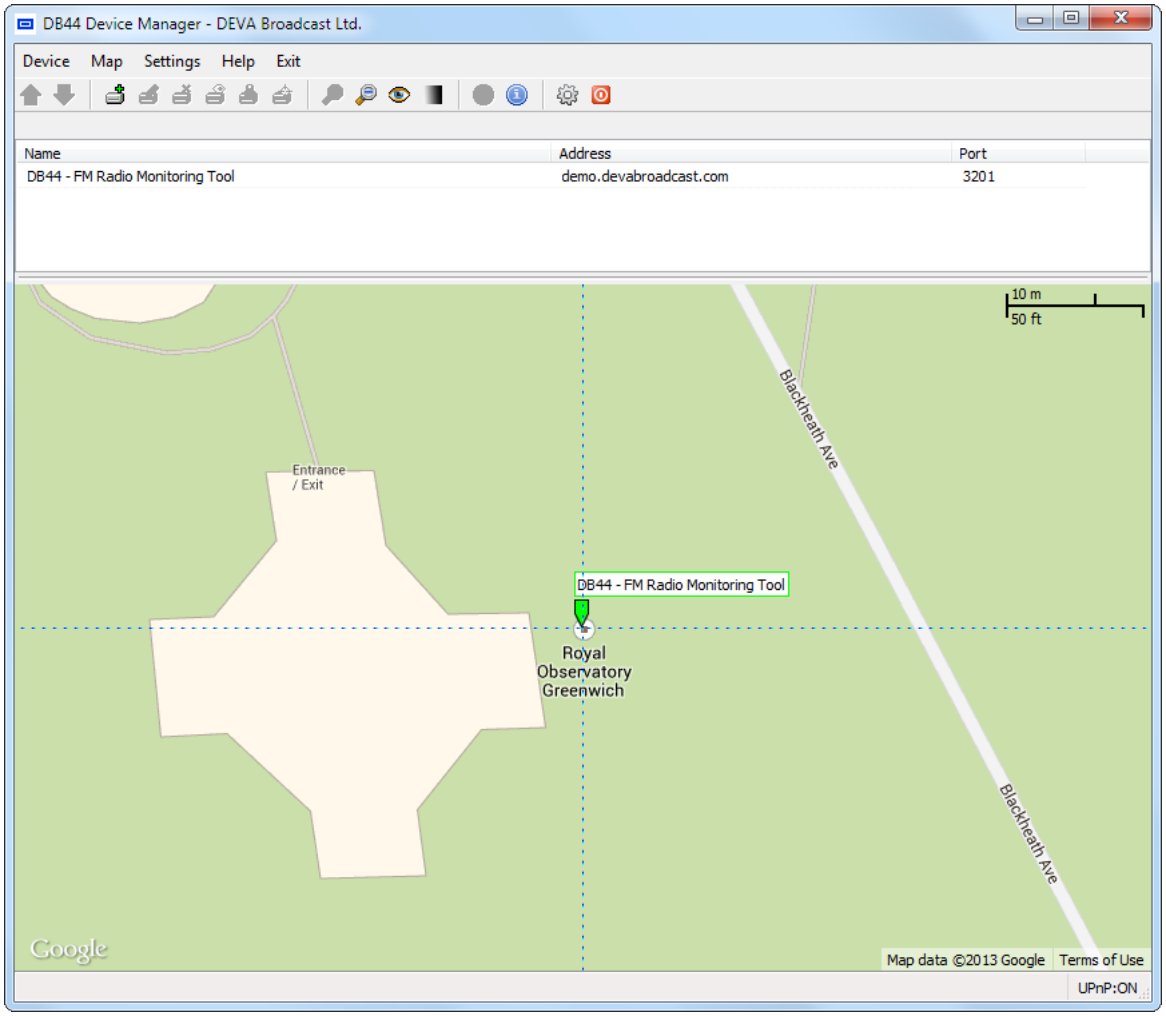
Connection

Address – IP Address or Host Name of the device;
Port – The default value of the Port is 80;
User and Password – credential required to access the device;

Location

Longitude and Latitude – if known the coordinates of the device's location could be specified.
Lock Position – selecting this option will "lock" the device on its current position on the map. This will prevent repositioning the device by mistake;
Look – the currently entered Longitude and Latitude will be used as a center of the Map;
Locate – Enter Region, City or Address and press the "Locate" button. All results found will be listed. Select the required location and then press the "Use" button in order the currently selected location to be used. The Coordinates will be updated automatically.

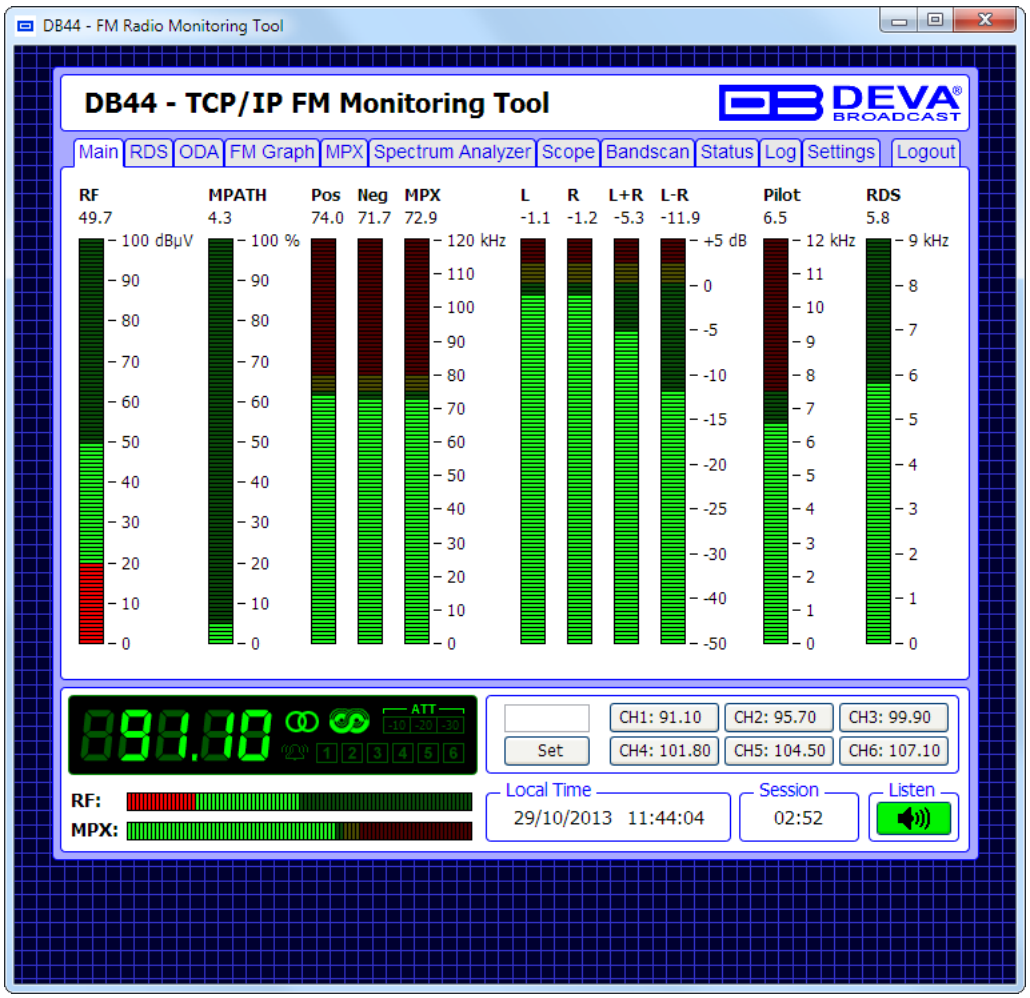
Fill in the requested information and press “OK”.



After the needed parameters are defined, the device will appear in the Device List and on the Map. There are two options of entering the device:

1. Select the preferred device and click on "View Device" button ;
2. Double click on the device.

This will open the "Device Control Interface":



EXPORT/IMPORT DEVICE LIST

This option is very useful for those users who want to install DB44 Device Manager on several computers and monitor the condition of devices installed on different locations.

Once you have defined all devices and placed them on the Map, you could export all settings and import them into other PCs, with DB44 Device Manager Software already installed.

Export Device List

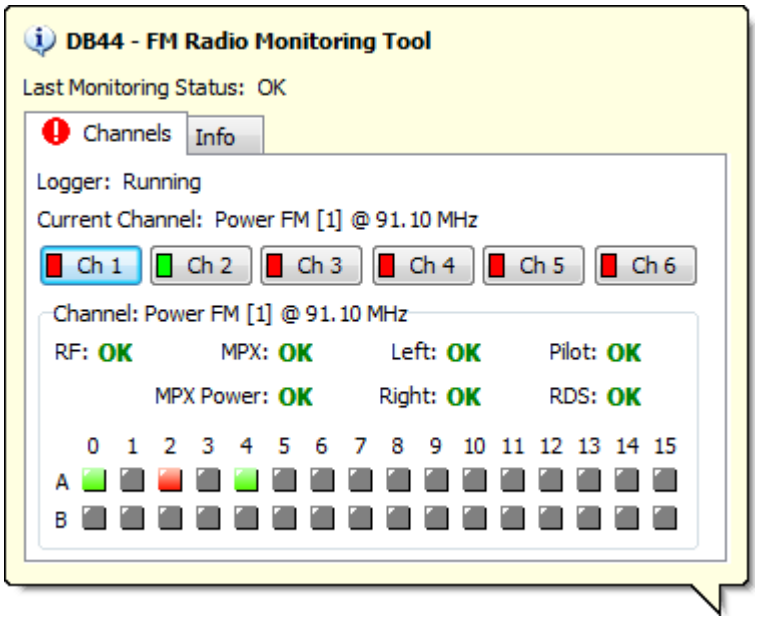
1. Click on "**Device**" menu and select "**Export Device List**";
2. Enter your Master password and press OK;
3. Save the file.

NOTE: Once the Device list has been exported all passwords in the resultant file will be visible to anyone who has access to it.

Import Device List

1. Click on "**Device**" menu and select "**Import Device List**";
2. Select the desired file and press OK;
3. The information will be transferred and displayed on DB44 Device Manager main window.

CURRENT STATUS



Information about the current status of the device will be displayed by pointing with the cursor on the desired device placed on the Map. The information provided is being updated periodically, and the contents depend on the selected device.

In order to indicate the current status of the device on the Map, the software utilizes the following color coding system:

Blue – No available information or the Device is not being monitored;

Green – No alarms and status acquisition conditions are detected.

Red – A problem (alarm or connection fail) with the device has been detected.

Device Managing

EDIT DEVICE

Used for editing of the device's current information.

REMOVE DEVICE

Select the device and press the "Remove device" button . A dialog warning window will appear. Confirm that you want to delete the device and wait for the process to complete.

VIEW DEVICE

A click on the "View Device" button will open the "Device Control Interface"

LOCK/UNLOCK DEVICE

Used for "locking/unlocking" of the device on its current position on the map.

1. Set the device at its position on the map;
2. Select the device from the list;
3. Press the "Lock"/"Unlock" button .

Once "Lock" action is performed the device should be "unlocked" in order for the current position to be changed.

LOCATE DEVICE ON MAP

This function is very useful when several devices are listed.

1. Select the desired device from the Device List;
2. Press the "Locate Device on Map" button .

The Software will automatically position the Map as to the device to be displayed in its center.

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Map

Each device is visually represented on the Map. This is an additional tool for fast evaluation of the currently selected device – condition, location, etc.

ZOOM IN/OUT

– Control option that will zoom in the Map image.
– Control option that will zoom out the Map image.

FIT ALL

– Control option that will position the Map in such manner as to display all devices situated on the map.

GRAYSCALE MAP/COLOR MAP

Having in mind that visual perception differs from person to person, the used map could be gray-scaled via this option, allowing easy monitoring of the current status and position of the devices.

The button is with dual use – once the grayscale function is applied, the same button would be referred as and used for “Color Map”.

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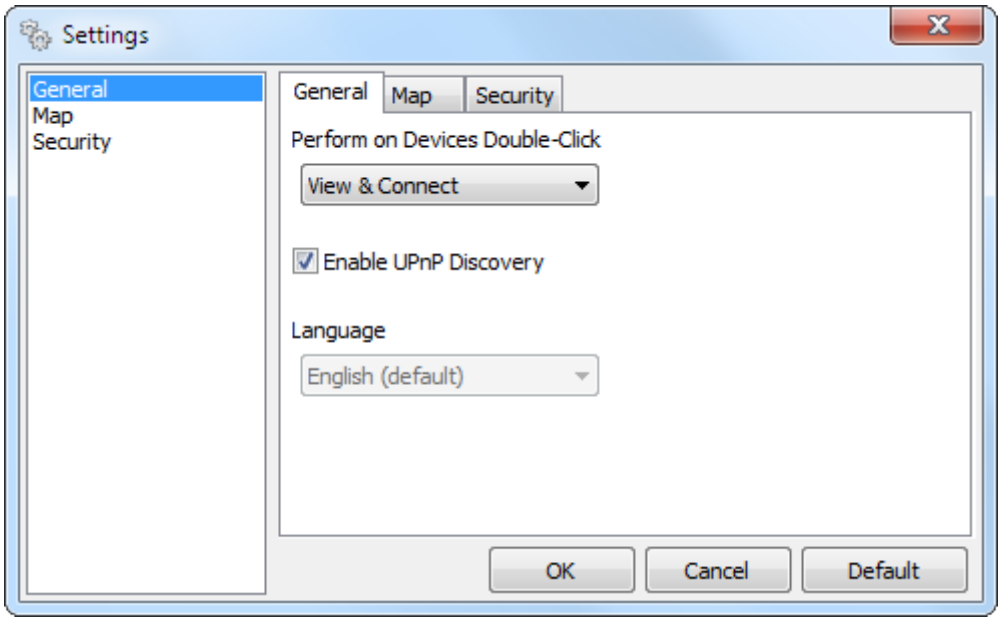
Main Application Settings

GENERAL



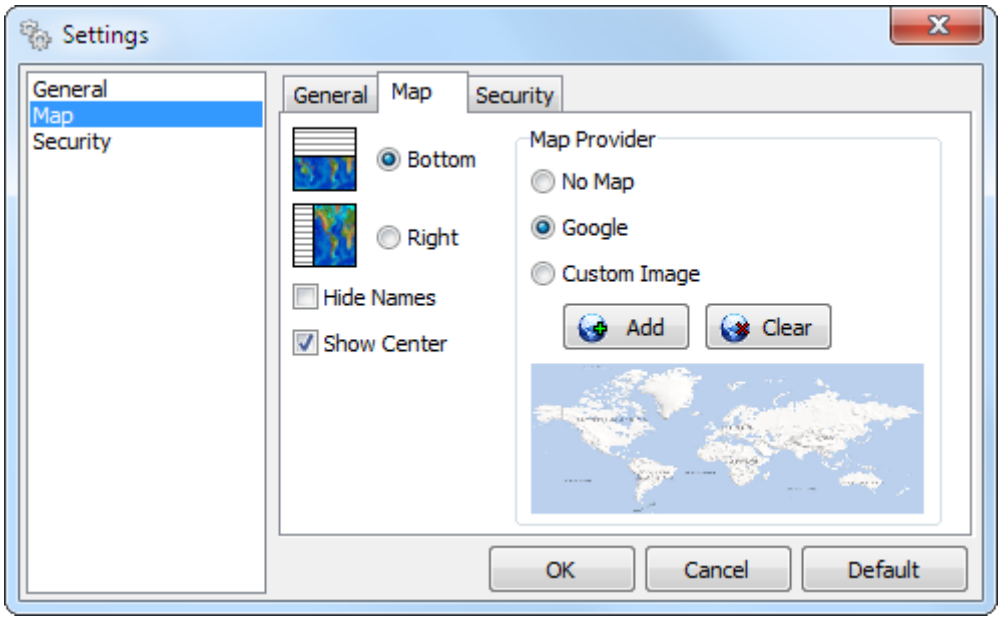
Perform on Devices Double-Click – The following options are available:

- View and Connect;
- Edit;
- Locate.

Enable/disable the UPnP Discovery – In order the new-found devices, as the local network is concerned (UPnP Discovery) to be automatically added to the list of devices this function should be enabled.

MAP

This section gives you the opportunity to alter the look of the Map section placed in the main application window.



Layout

– The Map could be situated on the **Bottom** or **Right** part of the screen

Appearance

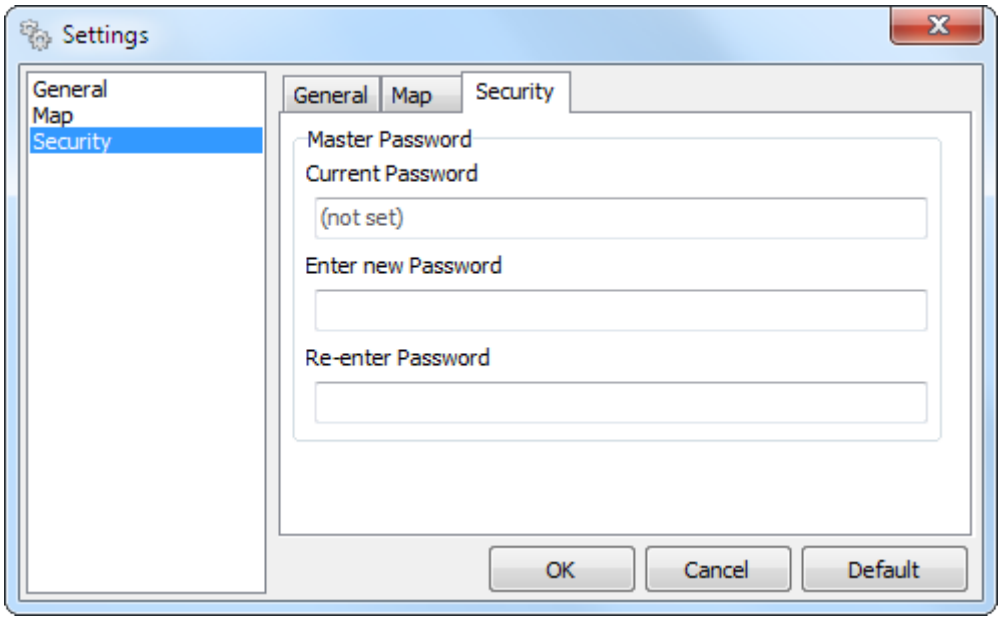
- Show Map Center – shows/hides the dotted lines used for indicating the map center.

- Hide names – The device's names could be made visible or not, by choosing the corresponding check box.

Map Provider

Depending on the requirements the map could be user-defined, Google Map or could not be used at all. Custom image may be added using the "Add" button – all types of images are supported. The currently employed user-defined map could be obliterated using the "Clear" button.

SECURITY



The Master Password protects stored passwords used for an access to remote devices. If you share a computer with anyone, it is recommended that you use a master password.

If you have set a Master password upon DB44 Device Manager's first activation, this section could be used for changing of the password.

NOTE: Please make sure you remember the Master Password you have set. If due to any reason you forget your Master Password, contact us for detailed instructions on the reset procedure.

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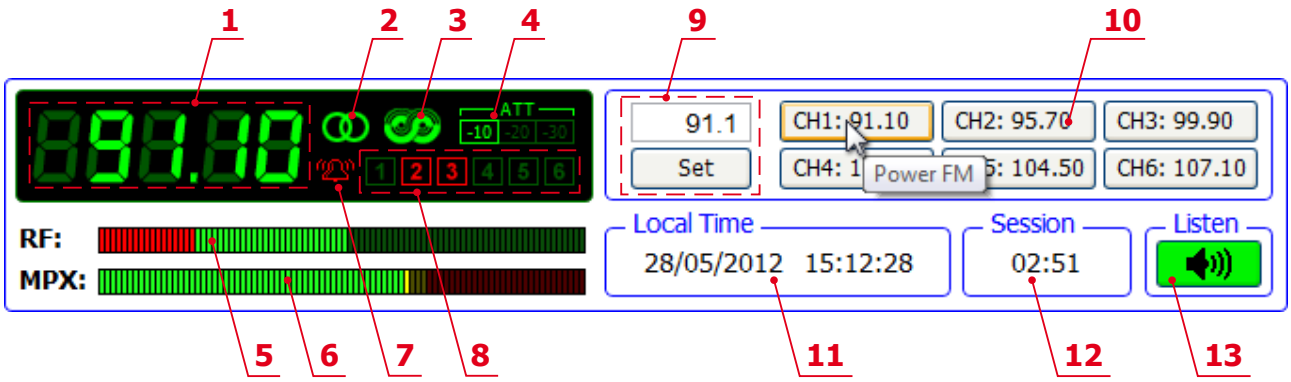
Device Control Interface

Control interface is visually divided into three parts:

- Top – Navigational Menu;
- Middle – specific contextual readings;
- Bottom – the "dashboard" of the device - General Tuner and Channel readings, functional buttons.

NOTE: Bottom section of the Control Interface is persistent regardless of the current screen, allowing immediate tuner interactions.



1 - Frequency indicator showing currently tuned frequency;

2 - Stereo indicator;

3 - RDS/RBDS presence indicator;

4 - RF Attenuator Status;

5 - RF Level indicator. The red zone (low level) indicates RF level below 20 dBµV;

6 - MPX Level indicator;

7 - Alarm presence indicator – will be lit in red when an alarm on at least one channel is detected;

8 - Channel Alarms indicator – will be lit in red when the Scheduler has detected an alarm on channel. (see "Channel Settings Screen" on page 34);

9 - Frequency set buttons;

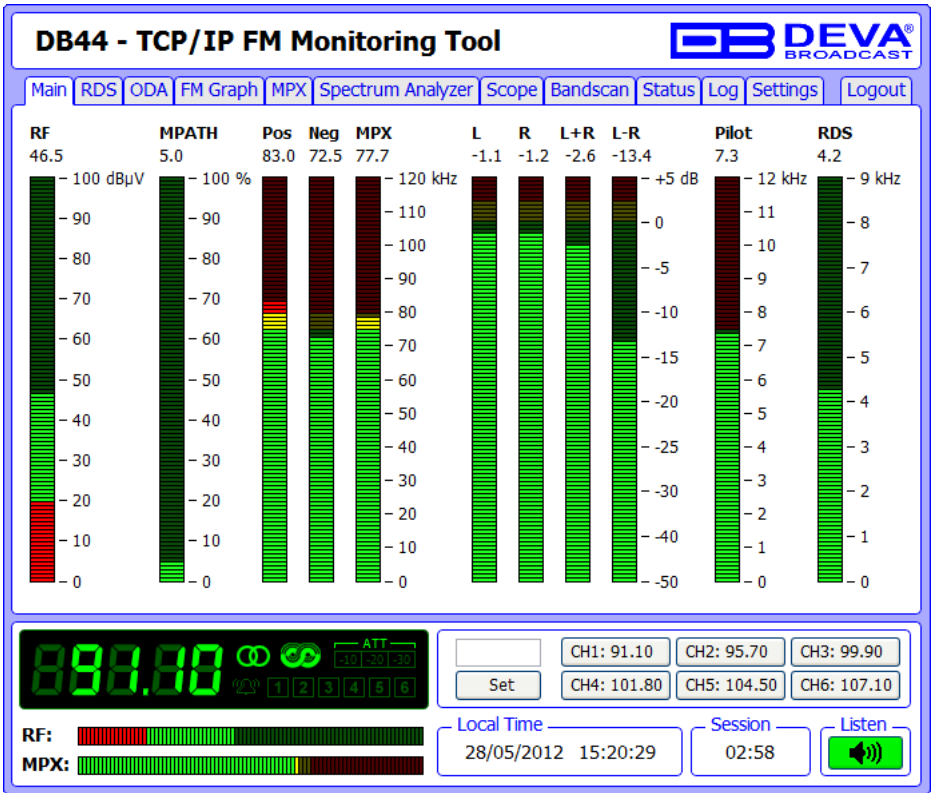
10 - Channel Preset Buttons – when one of the buttons is pressed, the Tuner will be set to the predefined frequency. Upon hovering with the mouse over a preset button, the name of the channel will be displayed;

11 - Device Time ("Management Screen" on page 39);

12 - Session remaining time;

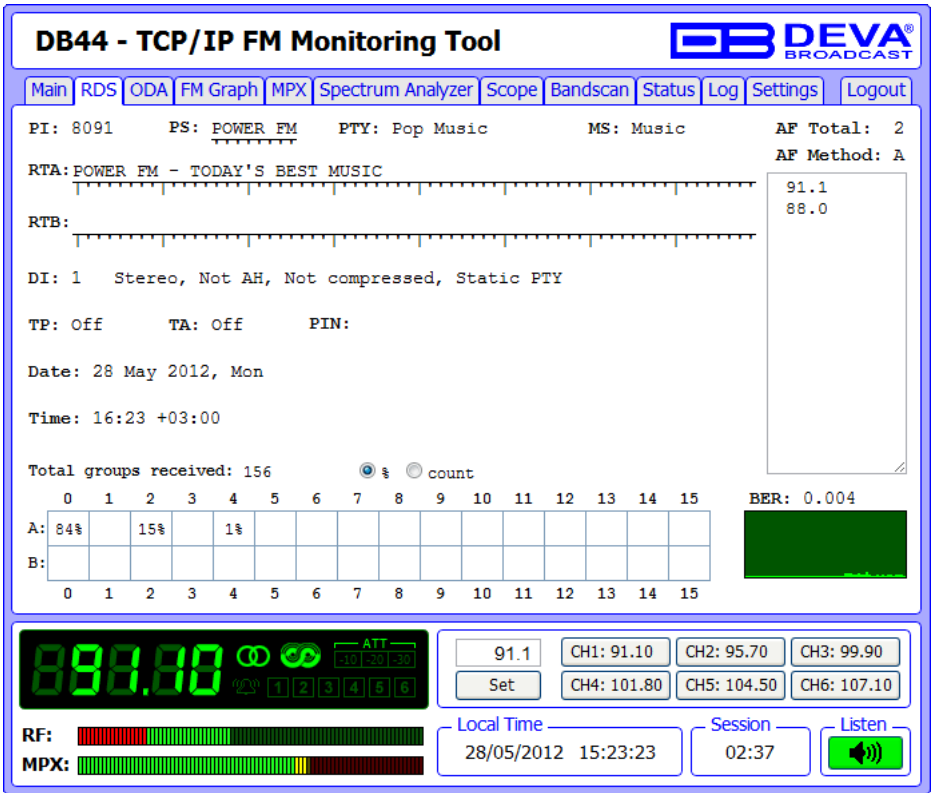
13 - Listen Button – Button with double usage used to Play/Stop the current audio stream (an audio device will be required).

MAIN SCREEN



The main page shows meters for RF level, measured multipath level, baseband modulation (positive and negative peaks), audio levels, PILOT and RDS/RBDS levels.

RDS/RBDS SCREEN

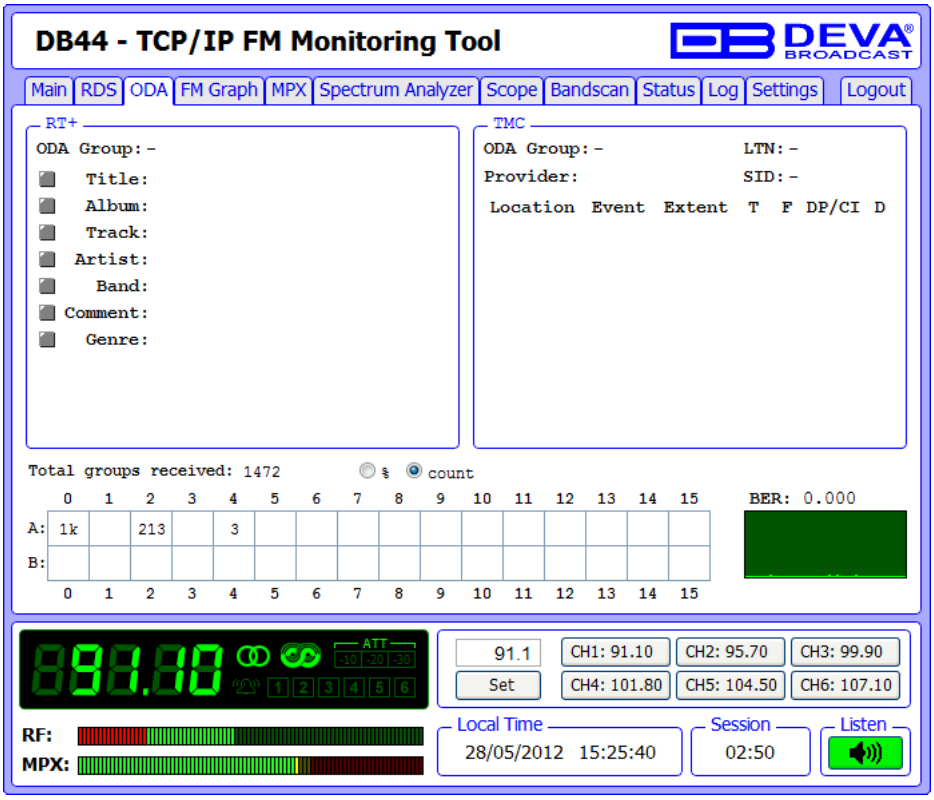


One of our core competencies lies in the RDS/RBDS. The RDS/RBDS page is very comprehensive, with a display of the RadioText (RTA and RTB), basic RDS/RBDS fields and a table of all decoded RDS/RBDS groups with a percentage measurement based on the overall RDS/RBDS data stream or group count. A very useful graph on this display is the rolling RDS/RBDS bit error rate (BER) display.

Total groups Indicator – all received groups are systematized into a table, representing the percentage/quantity of the groups in the received RDS/RBDS signal. The user selects how the "Total groups received" data should be displayed: as Percents (%) or Count, by selecting the corresponding button.

NOTE: The bit error rate or bit error ratio (BER) is the number of bit errors divided by the total number of transferred bits during a studied time interval. Result closer or equal to 0 indicates that no bit errors are detected and vice versa result closer or equal to 1 indicates that the received transferred bits are only errors.

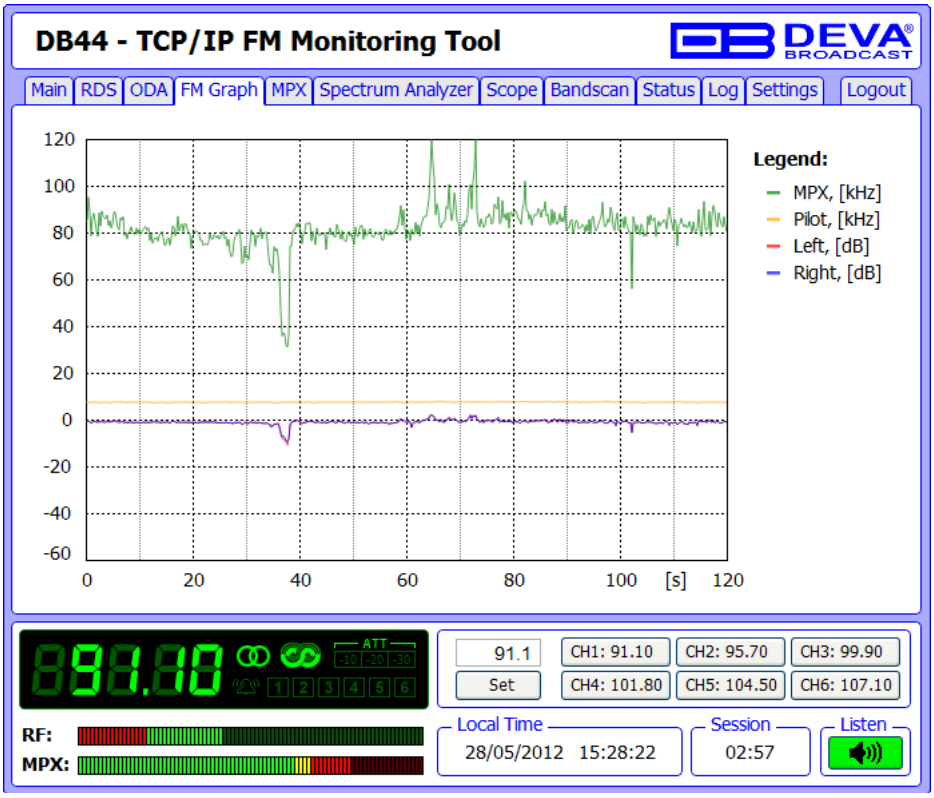
ODA SCREEN



If the selected station transmits RadioText+ (RT+) or TMC – here will be displayed the information from the supported ODA Groups.

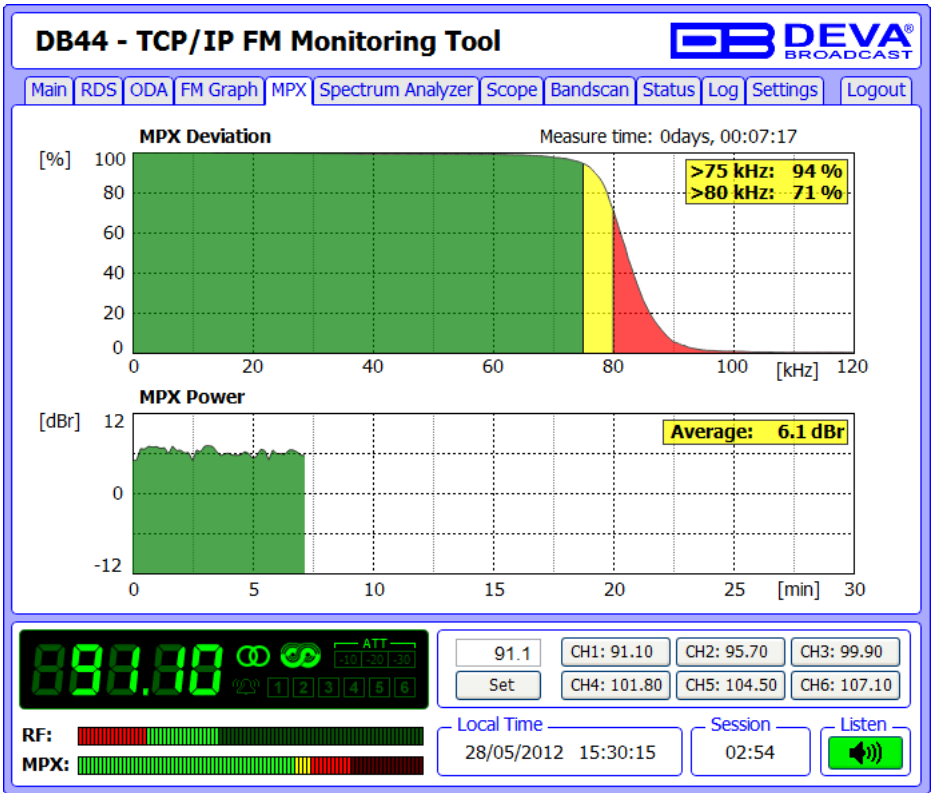
A BER Indicator with graphics is placed at the right bottom part of the screen, showing 60 sec history of the BER quantities.

FM GRAPH SCREEN



The FM graph is a multi-colored plot of MPX, Pilot, Left and Right audio levels. These mandatory parameters are represented in the time slice of 2 minutes, ensuring reading at a glimpse all significant parameters of the analog signal.

MPX SCREEN

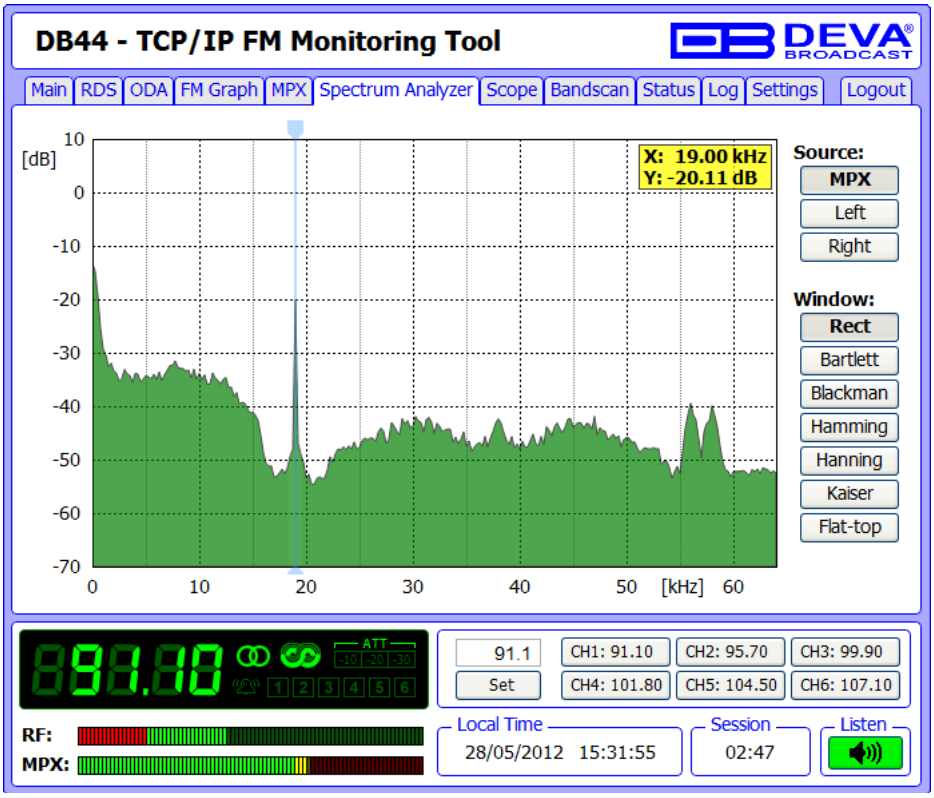


The MPX page shows the baseband MPX deviation as a function of deviation in kHz over the observation period. The graph immediately shows modulation density.

There is also a rolling 30-minute graph of the MPX power with average indicator, measured in dBr. The MPX Power is calculated continuously with an integration window of 60 seconds and a new sample every 10 seconds. Therefore, the first sample is available 60 seconds after tuning.

The rule of MPX Power provides to measure the modulation power which is seen equal to modulate signal electric power, for one minute time period and to compare it to a sinusoidal modulating signal one which deviates ±19kHz. The result, expressed in dB, must be lower or equal to zero to comply with the rule.

SPECTRUM ANALYZER SCREEN



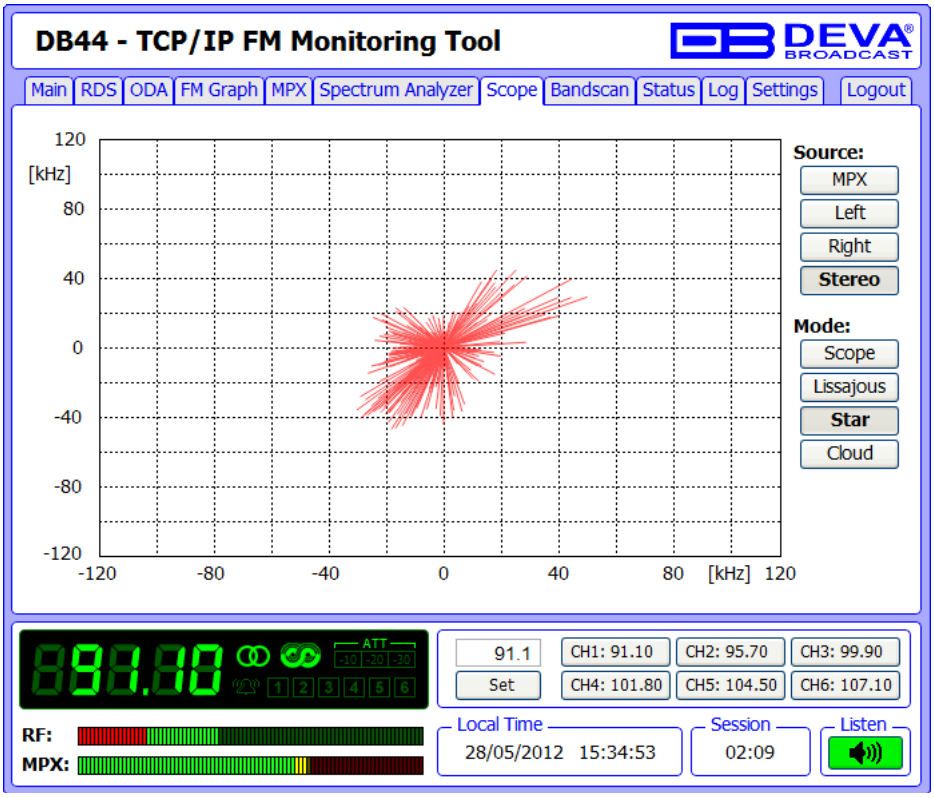
The spectrum analyzer tab is a very useful feature: It is a MPX and audio spectrum display. Initially it shows the MPX from 0-65kHz so that the readings of the currently selected source (composite MPX or stereo Left/Right) to be clearly visible. The signal source to be calculated and visualized is chosen from the Source section placed on the right part of the screen. Spectral components of the selected signal are determined on the base of Fast Fourier Transform.

The window function can be selected through the relevant menu with interactive buttons. The available windows and their features are given below. This table can be used to choose the best windowing function for each application.

Window	Best type for these Signal Types	Frequency Resolution	Spectral Leakage	Amplitude Accuracy
Rectangle	Transient & Synchronous Sampling	Best	Poor	Poor
Barlett	Random	Good	Fair	Fair
Blackman	Random or mixed	Poor	Best	Good
Hamming	Random	Good	Fair	Fair
Von Hann	Random	Good	Good	Fair
Flat-top	Sinusoids	Poor	Good	Best

User-defined frequency of the spectrum can be selected by moving vertical marker along the horizontal scale. Values at the cross-point will be shown at the top right corner of the graph.

SCOPE SCREEN



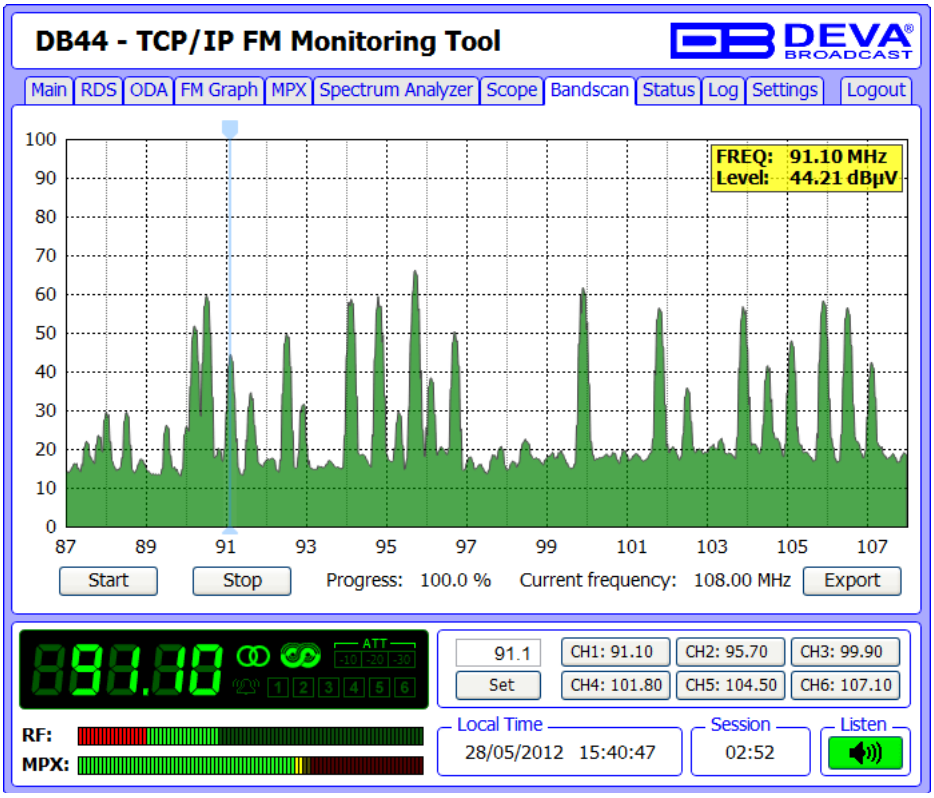
SCOPE screen represents the signals participating in the process of demodulating and stereo decoding over time. In order for the signal source to be changed, the corresponding button on the right-side of the graph should be pressed.

Once the Stereo source is selected, the following visualization modes are available:

- Scope – standard 2 channel oscilloscope:
- Lissajous – Lissajous figure representation of Left vs. Right channel;
- Star – Star-shaped representation of Left vs. Right channel;
- Cloud – Left vs. Right channel represented as cloud of points.

NOTE: Source “Stereo” visualizes the Left and Right signals at once.

BANDSCAN SCREEN

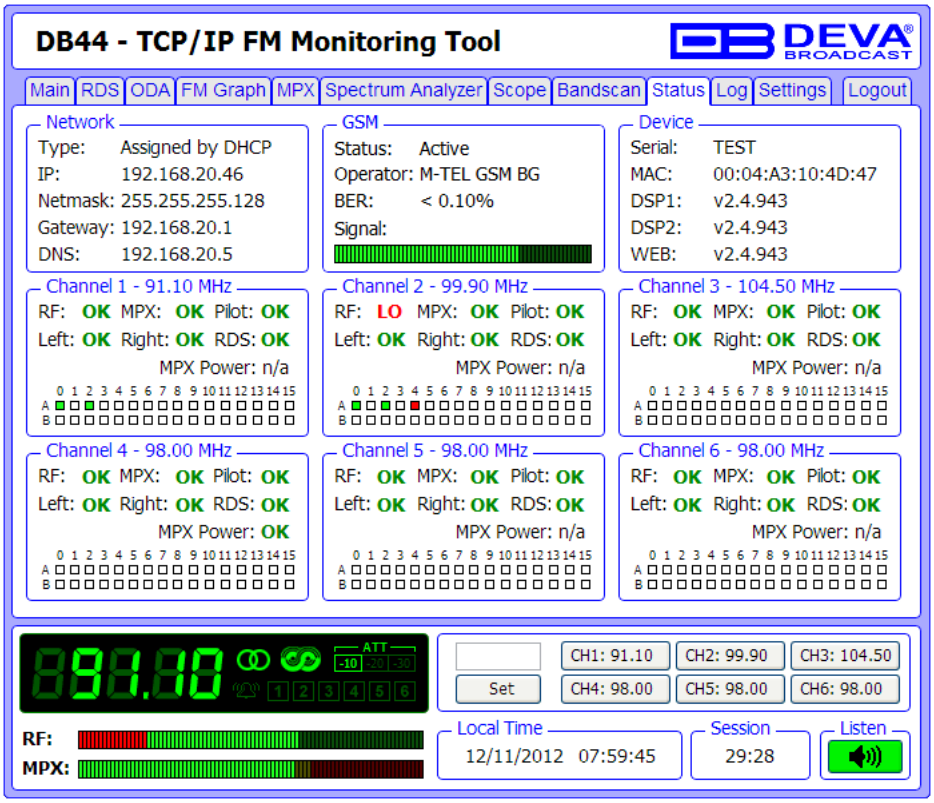


This Screen evaluates FM broadcast band congestion by sweeping the tuner across the FM band, logging every carrier and generating a spectrum display of carrier level vs. frequency.

In order for the Band scan process to be initiated, press the Start button and wait for the process to complete. The current scan could be stopped at any time by pressing the Stop button. To evaluate the RF level of specified frequency, move the vertical marker along the horizontal scale. Values at the cross-point will be shown at the top right corner of the graph.

All of the performed Band scans can be downloaded to your computer into CSV format using the “Export” button.

STATUS SCREEN



The status tab shows the alarm status of each parameter of the preset frequencies, along with the basic device and network status (IP address, MAC, etc.).

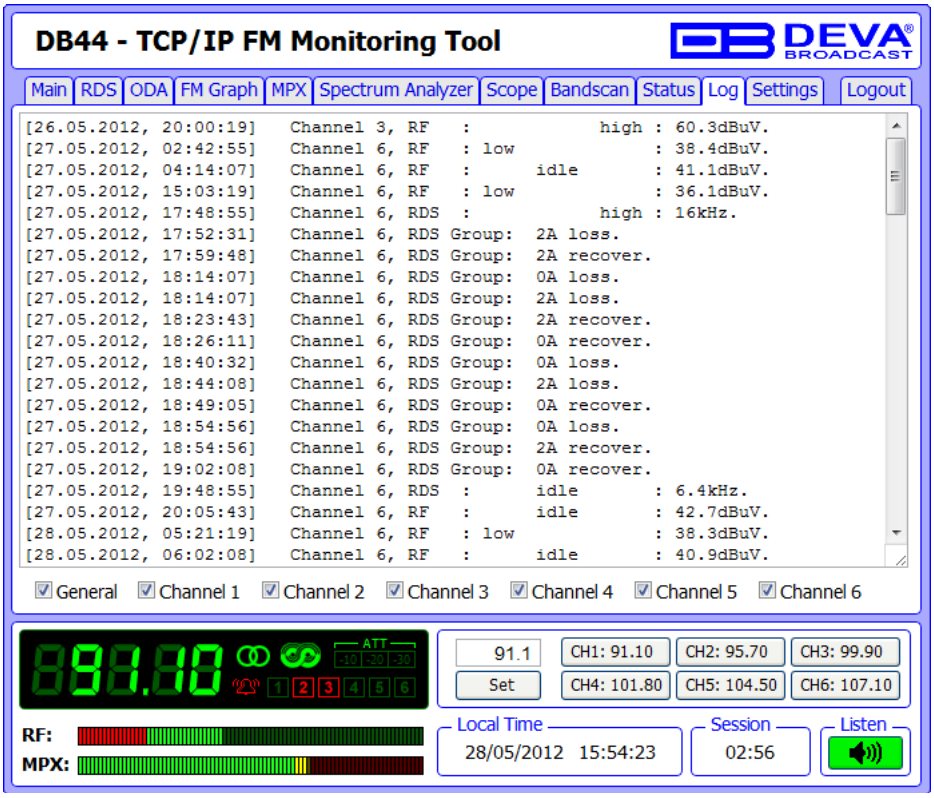
The Channel parameters (RF, MPX, Pilot etc.) have several conditions:

- In range – green OK. ("Channel Settings Screen" on page 34)
- Out of range – red LO or HI;
- Signal monitoring is not enabled – n/a.

The status of the RDS/RBDS Groups Alarm is displayed on the bottom of the channels' section:

- Green – RDS/RBDS Group is received;
- Red – RDS/RBDS Group is not received and an alarm has been triggered;
- White (blank) – RDS/RBDS Group is not received and no alarm has been triggered.

LOG SCREEN


DB44 - TCP/IP FM Monitoring Tool
Main
RDS
ODA
FM Graph
MPX
Spectrum Analyzer
Scope
Bandscan
Status
Log
Settings
Logout
[26.05.2012, 20:00:19] Channel 3, RF : high : 60.3dBuV.
[27.05.2012, 02:42:55] Channel 6, RF : low : 38.4dBuV.
[27.05.2012, 04:14:07] Channel 6, RF : idle : 41.1dBuV.
[27.05.2012, 15:03:19] Channel 6, RF : low : 36.1dBuV.
[27.05.2012, 17:48:55] Channel 6, RDS : high : 16kHz.
[27.05.2012, 17:52:31] Channel 6, RDS Group: 2A loss.
[27.05.2012, 17:59:48] Channel 6, RDS Group: 2A recover.
[27.05.2012, 18:14:07] Channel 6, RDS Group: 0A loss.
[27.05.2012, 18:14:07] Channel 6, RDS Group: 2A loss.
[27.05.2012, 18:23:43] Channel 6, RDS Group: 2A recover.
[27.05.2012, 18:26:11] Channel 6, RDS Group: 0A recover.
[27.05.2012, 18:40:32] Channel 6, RDS Group: 0A loss.
[27.05.2012, 18:44:08] Channel 6, RDS Group: 2A loss.
[27.05.2012, 18:49:05] Channel 6, RDS Group: 0A recover.
[27.05.2012, 18:54:56] Channel 6, RDS Group: 0A loss.
[27.05.2012, 18:54:56] Channel 6, RDS Group: 2A recover.
[27.05.2012, 19:02:08] Channel 6, RDS Group: 0A recover.
[27.05.2012, 19:48:55] Channel 6, RDS : idle : 6.4kHz.
[27.05.2012, 20:05:43] Channel 6, RF : idle : 42.7dBuV.
[28.05.2012, 05:21:19] Channel 6, RF : low : 38.3dBuV.
[28.05.2012, 06:02:08] Channel 6, RF : idle : 40.9dBuV.
General
Channel 1
Channel 2
Channel 3
Channel 4
Channel 5
Channel 6
ATT
91.1
Set
CH1: 91.10
CH2: 95.70
CH3: 99.90
CH4: 101.80
CH5: 104.50
CH6: 107.10
RF:
MPX:
Local Time
28/05/2012 15:54:23
Session
02:56
Listen

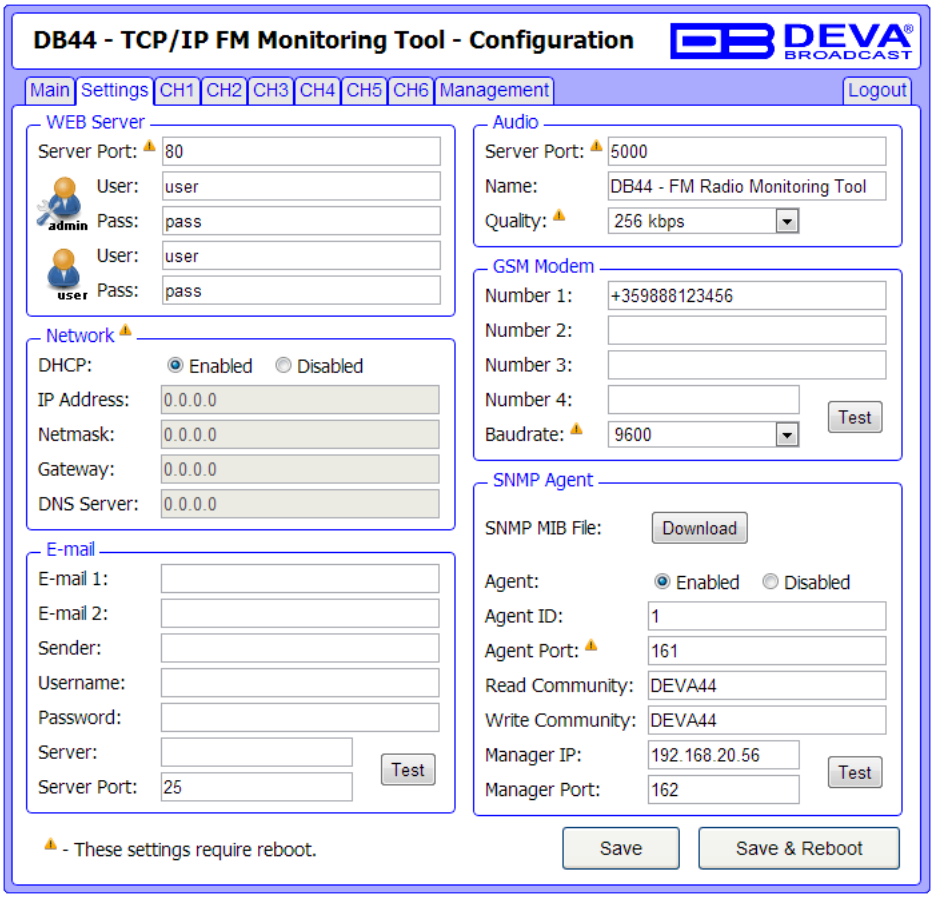
This screen shows the Device Log, which shows the last 100 important events. Selecting/ deselecting the corresponding check-boxes will filter the events by type.

SETTINGS SCREEN

WARNING: The applied changes will take effect upon pressing the **SAVE button**. All settings marked with ⚠ require Reboot hence the **Save & Reboot button** should be used. Navigation through the screens will revert to the last saved changes.

NOTE: The edited field will become red if the new value is invalid or out of range.

Main Settings Screen



WEB Server

Enter desired WEB Server Port, Username and Password to be used when accessing the WEB Server. There are 2 levels of access. Admin can access all screens and change all settings. The user can access only the operational screens and has no access to the settings.

Network

The network addresses could be set manually (static IP) or automatically via the DHCP server. To set static IP, MASK, GATEWAY and DNS addresses, the DHCP should be disabled. In order for the built-in DHCP client to be activated, the function should be enabled. As a result, all network addresses will become read-only. When the DHCP client is activated, all assigned values will be shown in the relevant fields of the "Status Screen". If due to any reason, the DHCP procedure cannot be completed, DB44 will use AutoIP and will generate an IP Address.

E-mail

Enter desired alarm recipients into e-mail 1 and/or e-mail 2 fields. Fill in your e-mail account settings: Sender, Username and Password, Server and corresponding port.

We recommend you to use the 'Test' button and generate test e-mail, which upon success will be delivered to specified E-mail 1 and/or E-mail 2.

Example of Test E-mail Message:

```
DB44 Test Message.
Please do not reply to this e-mail.
```

Audio

Specify Port for audio Streaming, Name of the stream (which is used also for email sender name and web title) and Quality (64, 96, 128, 192 or 256 kbps). The Audio Stream could be heard using suitable audio player (MS Media Player or Winamp) or through a WEB interface by pressing the "Listen" button.

GSM Modem

Up to four numbers for SMS alarm notifications could be set. Baud Rate is mandatory for the proper operation of the GSM Modem.

We recommend a test SMS to be generated (via pressing the 'Test' button), once all needed settings are applied. Upon success, the SMS will be delivered to all specified GSM numbers.

Example of Test SMS Message:

```
DB44 Test Message
```

NOTE: The current condition of the GSM Modem could be checked in the "Status Screen".

SNMP

Specify Agent ID, Agent Port, Read/Write Communities, Manager IP and Manager Port.

Agent - enables/disables SNMP Agent.

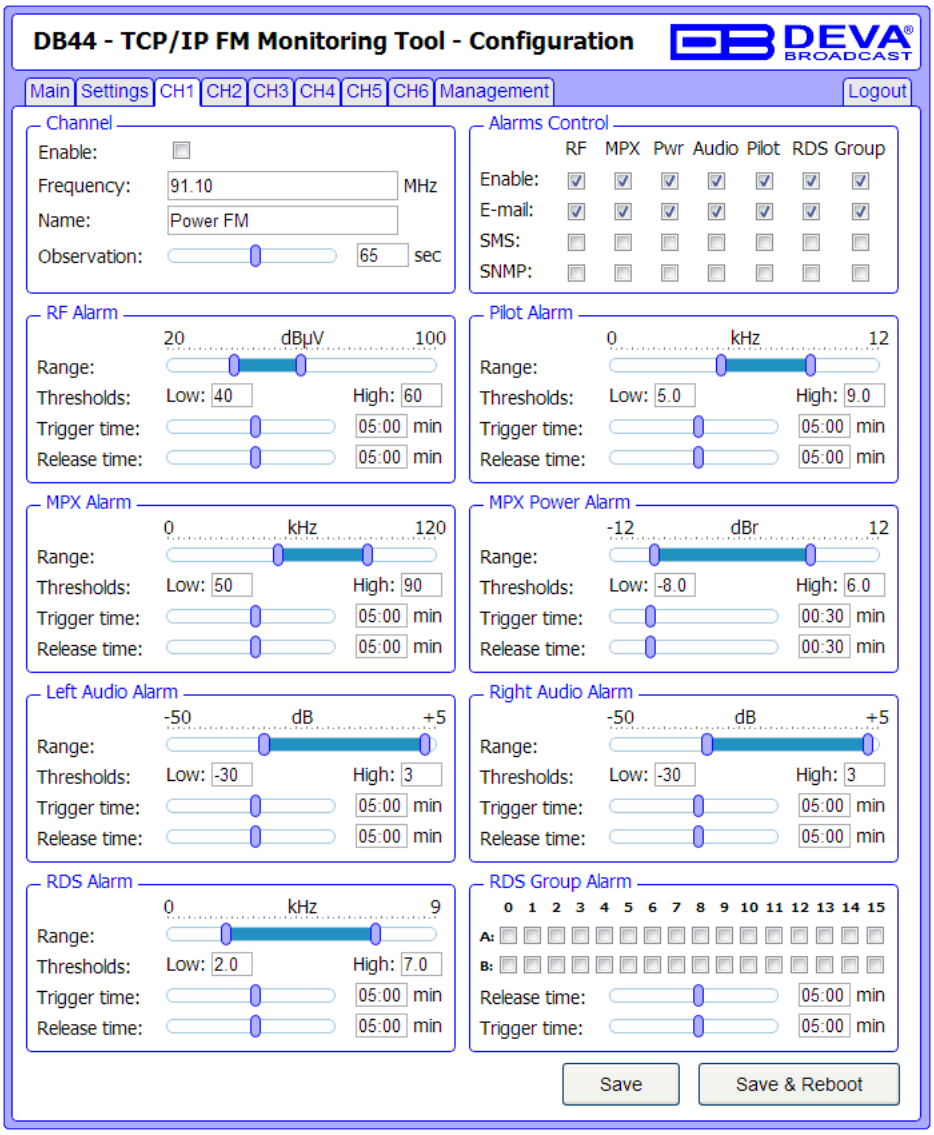
NOTE: Agent ID is used for identification of the device among others when an SNMP notification is sent.

Once all needed settings are applied, use Test button to generate a test notification, which upon success will be received by the SNMP Manager.

Press the 'Download' button to download the latest available DB44 SNMP MIB file.

NOTE: The MIB file may vary from one firmware revision to another. Downloading this file from the device guarantees that you have the proper MIB file.

Channel Settings Screen



DB44 could monitor up to 6 user-defined channels. Every Channel consists of a group of settings (explained in details below), which are used when monitoring and alerting. Each preset has its own page where it is being configured. Measurement windows can be set for each of the six parameters: RF level, Left and Right audio levels, MPX (baseband) deviation, Pilot and RDS/RBDS deviation. Trigger and alarm release times can be set for each alarm.

Channel

- Enable - enables/disables channel monitoring;
- Frequency – specify the frequency to be monitored;
- Name - channel alias;
- Observation – specify the observation time for the current station (before switching to the next channel).

NOTE: When MPX Power alarm is enabled the observation time must be more than 70 seconds.

Alarm Control

- Enable - enables/disables the corresponding parameter alarm logging;
- E-mail - enables/disables E-mail notification;
- SMS - enables/disables SMS notification;
- SNMP - enables/disables SNMP notification.

NOTE: If the monitoring option is disabled, notifications will not be sent, nevertheless whether they are enabled or disabled. A click on the label (left or above) will enable/disable the entire column/row.

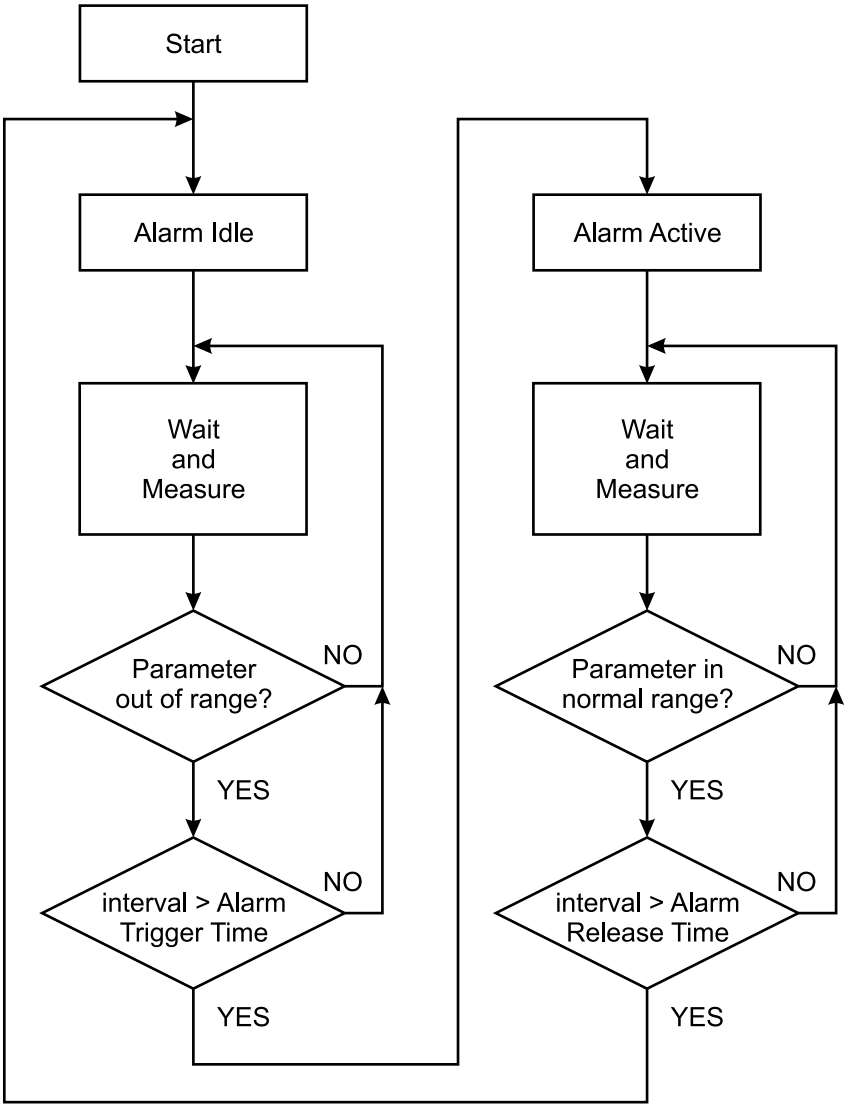
Alarm

- Range - interactive slider used to adjust the Low & High thresholds at which an alarm will be generated;
- Trigger Time – waiting time before Active Alarm is generated;
- Release Time – waiting time before Idle Alarm is generated;
- RDS/RBDS Group Alarm - alarm only for selected groups will be generated.

ALARM TRIGGERS DEFINED

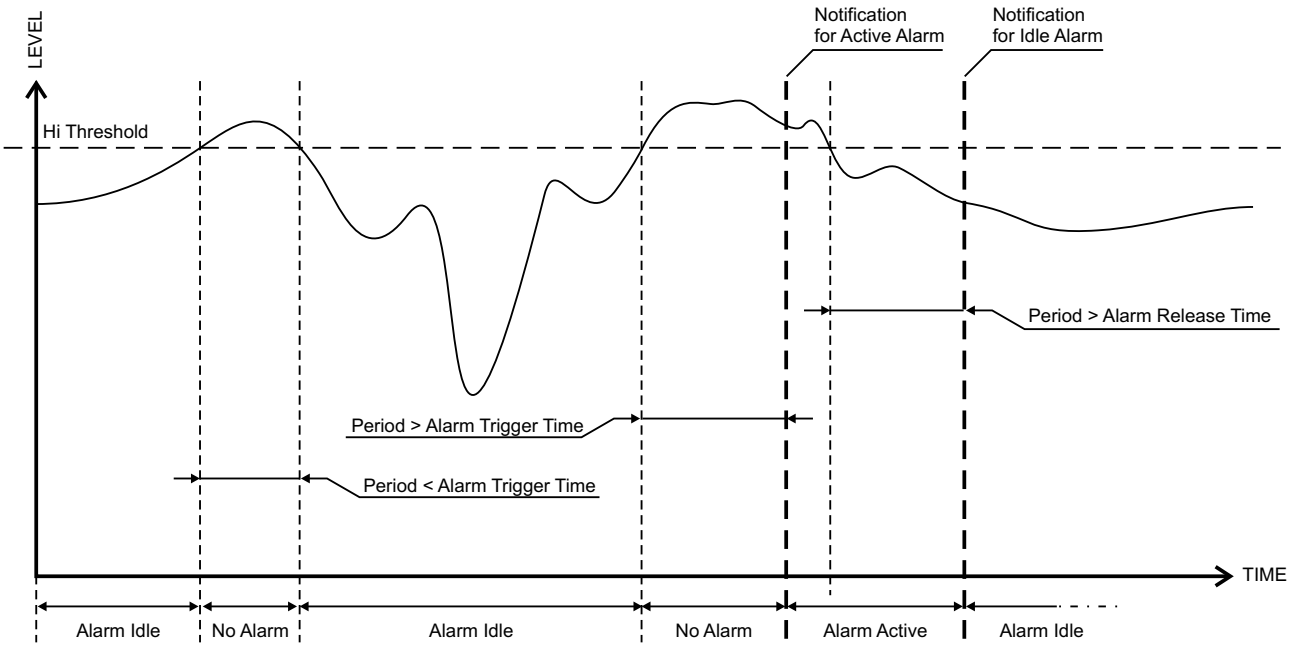
After collecting all the data the DB44 DSP core compares the values measured with the predefined by the user threshold levels for all the channels monitored. In case that any parameter is out of its limits, the device will initiate the sending of alarm notification via the alarm type selected. All the alarms are stored in the device's log. You have to have in mind that, if there is a very short fault of the signal, with duration less than the 'channel trigger time', the device would not trigger an alarm.

There are several Alarm Triggers for the following parameters: RF, MPX, MPX Power, Left/ Right Audio, RDS and Pilot levels. There is an option for defining different limits for each of the parameters. All these values, the 'trigger time' and the 'release time' have to be assigned separately for each of the channels.



Block Diagram of Alarm Automata

Every time an observation event takes place, the Alarm Trigger's State of the channel refreshes (if necessary). For example: Let's suppose that the Alarm Trigger is in Idle state. Note, that an alarm is not triggered immediately when a parameter level passes over threshold (above High Threshold or under Low Threshold). If the parameter level becomes stable (within Thresholds) and Alarm Trigger Time is not elapsed, then Alarm Trigger remains in Idle state. If Alarm Trigger Time expires and the parameter level is still out of bounds, then Alarm Trigger changes its state to Active. This causes predefined actions - Alarm Notifications (E-mail, SMS, SNMP trap) and Save a Log Record. The state will not be immediately changed to Idle when the parameter stabilizes (within Threshold levels), but will wait until 'Alarm Release Time' is elapsed. Meanwhile if the parameter passes over again any Threshold, the Alarm Trigger will remain in Active state. If the parameter remains within Threshold levels and Alarm Release Time expires, Alarm Trigger switches to Idle state and again predefined actions are initiated (as when entering Active state).



If RDS Group has not been received for more than Alarm Trigger Time state is changed to Active. If state is Active and Release Time has elapsed and the RDS Group is received state is changed to Idle. If the RDS Group is received before the Release Time is elapsed state remains Active.

ALARM NOTIFICATIONS

Alarm Notifications (E-mail, SMS, SNMP trap) consist of DB44 Alias (see "Main Settings Screen" on page 32), date and time of Alarm triggered, channel number, frequency and information for Alarm activation or deactivation. The basic signal parameters are evaluated and included as well.

Because of the SMS length limitations, only most important parameters are included, when sending SMS Notifications.

Example for E-mal Notification:

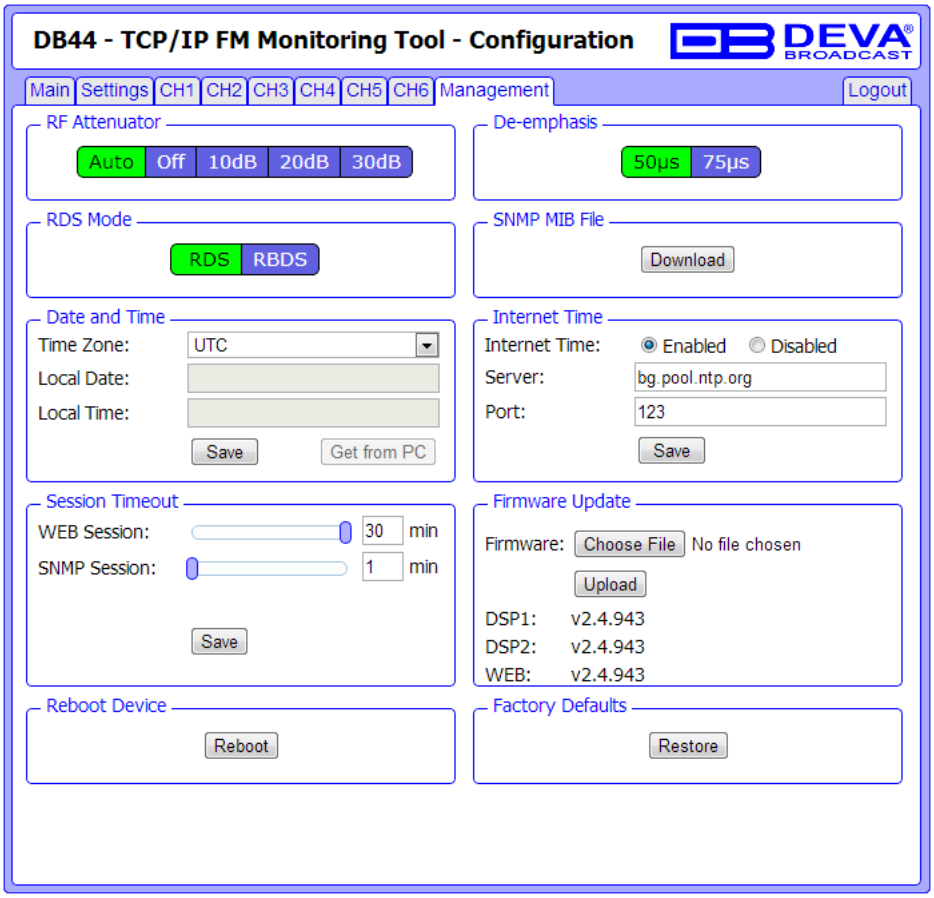
```
Date: 27 Sep 2011, 09:05:09

DB44 - FM Radio Monitoring Tool reports ACTIVE alarm on 95.70MHz -
BG Radio (CH2)

Alarm: RF < 40dBuV

Signal parameters:
RF Level: 64.6 dBuV
MPX: 65.8 kHz
Left: -1.6 dB
Right: -1.9 dB
Pilot: 7.95 kHz
RDS: 4.47 kHz
Multipath: 3.3 %
```

Example for SMS Notification:

```
ACTIVE ALARN:CH#2
27.09.2011 09:08:34
FREQ:95.7MHz
RF:35.0dBuV *L*
MPX:60.3kHz
Left:-2.8dB
Right:-3.1dB
Pilot:7.92kHz
RDS:4.12kHz
```

NOTE: *L* for LOW (below threshold), *H* for HIGH (above threshold)

MANAGEMENT SCREEN



RF Attenuator

Indicates the Antenna Input Attenuator's setting. Attenuation level can be selected by pressing on the preferred value. When AUTO is selected, DB44 will adjust automatically the Attenuator's position.

De-emphasis

Indicates currently selected de-emphasis.

Date and Time / Internet Time

When Internet Time is enabled, DB44 will automatically adjust its internal clock through the Internet. When Internet Time is disabled, Date and Time should be entered manually into corresponding fields or filled from PC Clock by pressing the 'Get From PC' button.

Firmware Update

If needed, DB44's firmware could be updated. Updating the firmware will ensure:

- New function(s);
- Improved performance;
- Eliminated bugs (if any).

To update the device firmware, please follow the steps listed below:

- Press the 'Browse'/'Choose File' button and select the new firmware file;
- Press the "Upload" button;
- Wait for the process to complete.

NOTE: Checking for updates regularly will ensure that the device is functioning correctly, and avoid potential problems.

Reboot Device

Pressing Reboot button will initiate a 'hardware reset' as if you have switched off and on the device. The previously applied/saved settings will not be deleted.

Factory Defaults

DB44 could be restored to Factory Defaults from its non-volatile memory. The procedure is quite simple - Press the 'Restore Button' and confirm the procedure.

WARNING: Before returning DB44 to its factory defaults, all remote users should be informed that they may cease to communicate with the device.

Session Timeout

Set WEB and SNMP sessions timeout. Please NOTE that during session, the Logger mode is not active, thus no Alarms are generated.

SNMP MIB File

Press the 'Download' button to download the latest available DB44 SNMP MIB file.

NOTE: The MIB file may vary from one firmware revision to another. Downloading this file from the device guarantees that you have the proper MIB file.

EXTERNAL GSM MODEM SETTINGS

To fulfill the Remote Monitoring Functions via GMS it is necessarily to connect an external GSM modem to DB44. To do this, connect the GSM Modem to the rear panel DB-15 male connector through the cable provided together with GSM Modem. A GSM Antenna must be supplied and connected to the connector of the GSM Modem.

IMPORTANT: Position the GSM Antenna as far as possible from the DB44's FM Antenna.

WARNING: Please check SIM Card PIN request to be disabled. Otherwise DB44 can not operate the modem.

The GSM Modem must be configured with the following settings:
Baud rate: equal to DB44 setting (see "Main Settings Screen" on page 32)
Data bits: 8
Stop bit: 1
Parity: None
Hardware Flow Control: None

NOTE: The GSM Modems provided by DEVA Broadcast Ltd. are pre-configured. In case of using different modems, please comply with the settings above.

To ensure proper installation of the GSM Modem, please observe the following sequence:
1. Install and connect the GSM Antenna according to the above recommendations.
2. Insert the SIM card into the holder. Card must be with deactivated PIN request.
3. Connect the GSM Modem and DB44 with the communication cable.
4. Power-up the GSM Modem.
5. Power-up DB44.

If the installation is proper, the GSM Modem will immediately startup. This will be noticed by the fast blinking of the 'GSM' Led on the DB44's front panel. The status of the GSM Modem will also be exposed on "Status Screen". Few seconds are usually necessary for the GSM Modem to initialize and to register into the GSM Network. When the GSM Modem is Ready the 'GSM' Led will start blinking slowly. The GSM Opeartor's Logo and the Field Strength will be also shown on the "Status Screen".

It is important to notice the call duration, which is 1 minute, otherwise the GSM connection may turn overused. 'Call Duration' defines the maximum outgoing call duration, which will be hanged-up by DB44 when it reaches the defined value (1 minute).

Only authorized GSM numbers can request remote notifications and remote listening. To register up to four GSM numbers use Main Settings Screen.

It is important to enter the GSM numbers properly, using the correct prefix for the country. For example: +359898123456

NOTE: The GSM Modem may be connected to DB44 without shutting down the device - so called 'Hot Plug'. When disconnected or powered down, the GSM Modem can be reconnected after the 'GSM' Led stops blinking (about 5 seconds). To prevent possible problems, we recommend, when possible, not to use 'Hot Plug'.

'Status Request' Command Format:

```
Status FFF.FF
```

'Remote Audio Listening' Command Format:

```
Listen FFF.FF
```

Where FFF.FF is the frequency to Tune in the range of 87 to 108 MHz.
For example: "Status 102.55" or "Listen 88.80".

IMPORTANT: Do not include leading zeroes such as "Listen 089.90". Fill in with trailing zeroes up to two digits after the decimal symbol. Decimal symbol must be "." (dot)

If DB44 receives an authorized 'Status Request' command, after a short interval (about 5 seconds), in which DB44 has to retune and collect summarized data, the Caller will receive a SMS response. For Example:

```
STATUS:
27.09.2011 09:08:34
FREQ:102.50MHz
RF:32.7dBuV
MPX:103.2kHz
Left:-4.8dB
Right:-4.9dB
Pilot:7.5kHz
RDS:18.5kHz
```

'Remote Audio Listening' command will generate (only if the calling number is authorized) a response call from DB44 to the command sender. DB44 will wait for answer, and will hang-up after 30 seconds, if there is no incoming answer. When a call is accepted, the duration of 'listening' is determinate by 'Call Duration' interval or until the call is ended.

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PRODUCT REGISTRATION CARD

• All fields are required, or warranty registration is invalid and void

Your Company Name_____

Contact_____

Address Line 1_____

Address Line 2_____

City_____

State/Province_____ ZIP/Postal Code_____

Country_____

E-mail_____ Phone_____ Fax_____

Which DEVA Broadcast Ltd. product did you purchase?_____

_____

_____

Product Serial #_____

Purchase date_____/_____/_____ Installation date_____/_____/_____

_____
Your signature*

*Signing this warranty registration form you are stating that all the information provided to DEVA Broadcast Ltd. are truth and correct. DEVA Broadcast Ltd. declines any responsibility for the provided information that could result in an immediate loss of warranty for the above specified product(s).

Privacy statement: DEVA Broadcast Ltd. will not share the personal information you provide on this card with any other parties.

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WARRANTY TERMS AND CONDITIONS

I. TERMS OF SALE: DEVA Broadcast Ltd. products are sold with an understanding of "full satisfaction"; that is, full credit or refund will be issued for products sold as new if returned to the point of purchase within 30 days following their receipt, provided that they are returned complete and in an "as received" condition.

II. CONDITIONS OF WARRANTY: The following terms apply unless amended in writing by DEVA Broadcast Ltd.

A. The Warranty Registration Card supplied with this product must be completed and returned to DEVA Broadcast Ltd. within 10 days of delivery.

B. This Warranty applies only to products sold "as new." It is extended only to the original end-user and may not be transferred or assigned without prior written approval by DEVA Broadcast Ltd.

C. This Warranty does not apply to damage caused by improper mains settings and/or power supply.

D. This Warranty does not apply to damage caused by misuse, abuse, accident or neglect. This Warranty is voided by unauthorized attempts at repair or modification, or if the serial identification label has been removed or altered.

III. TERMS OF WARRANTY: DEVA Broadcast Ltd. products are warranted to be free from defects in materials and workmanship.

A. Any discrepancies noted within TWO YEARS of the date of delivery will be repaired free of charge, or the equipment will be replaced with a new or remanufactured product at DEVA Broadcast Ltd. option.

B. Parts and labor for factory repair required after the one-year Warranty period will be billed at prevailing prices and rates.

IV. RETURNING GOODS FOR FACTORY REPAIR:

A. Equipment will not be accepted for Warranty or other repair without a Return Authorization (RA) number issued by DEVA Broadcast Ltd. prior to its return. An RA number may be obtained by calling the factory. The number should be prominently marked on the outside of the shipping carton.

B. Equipment must be shipped prepaid to DEVA Broadcast Ltd.. Shipping charges will be reimbursed for valid Warranty claims. Damage sustained as a result of improper packing for return to the factory is not covered under terms of the Warranty and may occasion additional charges.

APPENDIX A

RDS: EUROPE VS AMERICA

The European Broadcasting Union (EBU) and its member countries originated the concept of "Radio Data" transmission. The European RDS specification, CENELEC Standard EN50067, was first published in 1984. It was revised in 1986, 1990, 1991 and 1992.

European RDS has grown in use following initial adoption of the Standard. RDS is nearly universal throughout Europe; it is almost impossible to find a European FM broadcasting station that does not carry a radio data subcarrier.

The popularity of RDS in Europe is very much in contrast with initial reluctance on the part of US broadcasters to embrace this technology. This can be ascribed to material differences in broadcasting practices.

Almost without exception, FM broadcasting in the United States is 'detached' and independent - each station originates its own programming. America's National Public Radio might be considered as an exception, though for most of the broadcast day even NPR stations originate, or at least schedule, their own programs.

Most of European broadcasting is similar to the concept of network radio that was common in the US prior to the 1950s. In Europe, a central program originator may have many transmitting facilities of modest power situated throughout the country, at several different frequencies to blanket a designated service area. The European disposition, toward lower-power transmitters can be found on the "local radio" level, as well.

The European concept of a service area equates to the US broadcaster's market. The subtle difference between these designations further characterizes broadcasting practices and ethics. RDS benefits the European broadcaster through almost an altruistic endeavor to be of service to his listeners. The US broadcaster is marketing his programming and is primarily interested in how he can create additional revenue from RDS.

THE RDS SYSTEM

RDS is a digital data channel, transmitted as a low-level subcarrier above the range of the composite stereo program signal in the FM baseband. The data transmission (baud) rate is comparatively low, yet it is quite robust because of data redundancy and effective error correction.

It is not within the scope of this Manual to cover the details of RDS subcarrier coding and modulation. For this, the reader is directed to the Specification appropriate to his location either the CENELEC EN50067 Specification for Europe or the United States NRSC Specification. Since the Manual will deal with specific implication of RDS implemented with the DB44 Device Manager, it is assumed that the user is familiar with the RDS concept.

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APPENDIX C.1

PTY Code Description Used in RBDS Mode – North America

PTY	Short Name	Description
1	News	News reports, either local or network in origin.
2	Information	Programming that is intended to impart advice.
3	Sports	Sports reporting, commentary, and/or live event coverage, either local or network in origin.
4	Talk	Call-in and/or interview talk shows either local or national in origin.
5	Rock	Album cuts.
6	Classic Rock	Rock oriented oldies, often mixed with hit oldies, from a decade or more ago.
7	Adult Hits	An up-tempo contemporary hits format with no hard rock and no rap.
8	Soft Rock	Album cuts with a generally soft tempo.
9	Top 40	Current hits, often encompassing a variety of rock styles.
10	Country	Country music, including contemporary and traditional styles.
11	Oldies	Popular music, usually rock, with 80% or greater non-current music.
12	Soft	A cross between adult hits and classical, primarily non-current softrock originals.
13	Nostalgia	Big-band music.
14	Jazz	Mostly instrumental, includes both traditional jazz and more modern “smooth jazz.”
15	Classical	Mostly instrumentals, usually orchestral or symphonic music.
16	Rhythm and Blues	A wide range of musical styles, often called “urban contemporary.”
17	Soft R and B	Rhythm and blues with a generally soft tempo.
18	Foreign Language	Any programming format in a language other than English.
19	Religious Music	Music programming with religious lyrics.
20	Religious Talk	Call-in shows, interview programs, etc. with a religious theme.
21	Personality	A radio show where the on-air personality is the main attraction.
22	Public	Programming that is supported by listeners and/or corporate sponsors instead of advertising.
23	College	Programming produced by a college or university radio station.
24-28	Unassigned	
29	Weather	Weather forecasts or bulletins that are non-emergency in nature.
30	Emergency Test	Broadcast when testing emergency broadcast equipment or receivers. Not intended for searching or dynamic switching for consumer receivers. Receivers may, if desired, display “TEST” or “Emergency Test”.
31	Emergency	Emergency announcement made under exceptional circumstances to give warning of events causing danger of a general nature. Not to be used for searching - only used in a receiver for dynamic switching.

NOTE: These definitions can differ slightly between various language versions.

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APPENDIX C.2

PTY Code Description Used in RDS Mode – Europe, Asia

PTY	Short Name	Description
1	News	Short accounts of facts, events and publicly expressed views, reportage and actuality.
2	Current affairs	Topical program expanding or enlarging upon the news, generally in different presentation style or concept, including debate, or analysis.
3	Information	Program the purpose of which is to impart advice in the widest sense.
4	Sport	Program concerned with any aspect of sport.
5	Education	Program intended primarily to educate, of which the formal element is fundamental.
6	Drama	All radio plays and serials.
7	Culture	Programs concerned with any aspect of national or regional culture.
8	Science	Programs about the natural sciences and technology.
9	Varied	Used for mainly speech-based programs usually of light-entertainment nature, not covered by other categories. Examples include: quizzes, games, personality interviews.
10	Pop	Commercial music, which would generally be considered to be of current popular appeal, often featuring in current or recent record sales charts.
11	Rock	Contemporary modern music, usually written and performed by young musicians.
12	Easy Listening	Current contemporary music considered to be “easy-listening”, as opposed to Pop, Rock or Classical, or one of the specialized music styles, Jazz, Folk or Country. Music in this category is often but not always, vocal, and usually of short duration.
13	Light classics	Classical Musical for general, rather than specialist appreciation. Examples of music in this category are instrumental music, and vocal or choral works.
14	Serious classics	Performances of major orchestral works, symphonies, chamber music etc., and including Grand Opera.
15	Other music	Musical styles not fitting into any of the other categories. Particularly used for specialist music of which Rhythm & Blues and Reggae are examples.
16	Weather	Weather reports and forecasts and Meteorological information.
17	Finance	Stock Market reports, commerce, trading etc.
18	Children’s programs	For programs targeted at a young audience, primarily for entertainment and interest, rather than where the objective is to educate.
19	Social Affairs	Programs about people and things that influence them individually or in groups. Includes: sociology, history, geography, psychology and society.
20	Religion	Any aspect of beliefs and faiths, involving a God or Gods, the nature of existence and ethics.
21	Phone In	Involving members of the public expressing their views either by phone or at a public forum.
22	Travel	Features and programs concerned with travel to near and far destinations, package tours and travel ideas and opportunities. Not for use for Announcements about problems, delays, or roadworks affecting immediate travel where TP/TA should be used.
23	Leisure	Programs concerned with recreational activities in which the listener might participate. Examples include, Gardening, Fishing, Antique collecting, Cooking, Food & Wine etc.
24	Jazz Music	Polyphonic, syncopated music characterized by improvisation.
25	Country Music	Songs which originate from, or continue the musical tradition of the American Southern States. Characterized by a straightforward melody and narrative story line.
26	National Music	Current Popular Music of the Nation or Region in that country’s language, as opposed to International ‘Pop’ which is usually US or UK inspired and in English.
27	Oldies Music	Music from the so-called “golden age” of popular music.
28	Folk Music	Music which has its roots in the musical culture of a particular nation, usually played on acoustic instruments. The narrative or story may be based on historical events or people.
29	Documentary	Program concerned with factual matters, presented in an investigative style.
30	Alarm Test	Broadcast when testing emergency broadcast equipment or receivers. Not intended for searching or dynamic switching for consumer receivers.. Receivers may, if desired, display “TEST” or “Alarm Test”.
31	Alarm	Emergency announcement made under exceptional circumstances to give warning of events causing danger of a general nature. Not to be used for searching - only used in a receiver for dynamic switching.